

## **ATHLETIC SHOE WITH INFLATABLE TONGUE**

### **BACKGROUND OF THE INVENTION**

#### **Field of the Invention**

**[0001]** The invention relates to athletic shoes, and, more particularly, to an athletic shoe having an inflatable tongue for conforming the shoe to the foot of the wearer.

#### **Related Art**

**[0002]** Athletic shoes having some means for conforming the shoe to the foot of the wearer to make them more comfortable are well known in the art.

**[0003]** An athletic shoe having an inflatable bladder in the form of a tongue is disclosed in U.S. Patent No. 5,113,599 to Cohen *et al.* The bladder is inflated by a pump having a release valve. The release valve must be separately activated to deflate the bladder.

**[0004]** In U.S. Patent No. 5,158,767 to Cohen *et al.*, another athletic shoe with an inflatable tongue bladder is disclosed. This pump is rather elaborate with tubing since it is disposed in the back of the shoe. Again, the release valve must be separately depressed.

**[0005]** In U.S. Patent No. 5,987,779 to Litchfield *et al.*, another athletic shoe is disclosed having an inflatable tongue bladder. The pump disclosed also includes a release valve which must be enabled to release air.

**[0006]** There is a need for an athletic shoe having an inflatable tongue bladder which can be quickly and easily inflated or deflated.

### **SUMMARY OF THE INVENTION**

**[0007]** It is an object of this invention to provide an athletic shoe having an inflatable tongue bladder that can quickly be inflated and deflated to conform to the contour of the wearer's foot.

**[0008]** It is a further object of this invention to provide such a shoe which does not require independent activation of a release valve.

**[0009]** These and other objects are preferably accomplished by providing an athletic shoe having an inflatable tongue which can be slightly deflated after lacing up or

otherwise closing the shoe to conform to the user's foot or instep to provide a more comfortable fit of the shoe.

#### **BRIEF DESCRIPTION OF THE DRAWING**

[0010] Fig. 1 is a perspective view of an athletic shoe with a tongue in accordance with the teachings of the invention;

[0011] Fig. 2 is a top plan view of the shoe of Fig. 1;

[0012] Fig. 3 is a plan view of the tongue alone of Figs. 1 and 2 removed from the shoe;

[0013] Fig. 4 is a view of the tongue of Fig. 3 taken along line 4-4 thereof;

[0014] Fig. 5 is a view of the tongue of Fig. 4 taken along line 5-5 thereof; and

[0015] Figs. 6 to 8 are cross-sectional views of the valve and tongue bladder of the shoe of Figs. 1 to 4 illustrating actuation of the valve and the effect on the interior of the tongue bladder.

#### **DESCRIPTION OF THE PREFERRED EMBODIMENTS**

[0016] Referring now to Fig. 1 of the drawing, an athletic shoe 10 is shown. Shoe 10 is a conventional shoe including a sole 11, an upper 12, laces 13 and eyelets 14. As particularly contemplated in the present invention, a tongue 15 is shown which is adapted to be sewn or otherwise secured into the normal position of a tongue in a shoe, as also shown in Fig. 2.

[0017] Tongue 15 is shown removed from shoe 10 in Fig. 3. Tongue 15 is generally triangularly shaped but rounded at both ends. Thus, tongue 15 includes a first tapered narrow end 16, rounded at 17, and a second enlarged end 18, rounded at 19, interconnected by mid-portion 20.

[0018] End 16 is adapted to be sewn or otherwise secured internally of shoe 10 to provide a tongue for shoe 10 as seen in Fig. 2.

[0019] As seen in Fig. 4, tongue 15 may be comprised of mating pieces of material, such as a first upper layer 21 of material stitched or otherwise secured to a second lower layer 22 of material along peripheral flange 23.

**[0020]** Any suitable material may be used for layers 21, 22. For example, a leather or woven material may be used or a combination thereof.

**[0021]** The interior of tongue 15 is filled with a sponge foam layer 24, such as urethane, or any suitable resilient material capable of allowing fluid to pass therethrough. One example is an open-cell or reticulated foam having 10 to 55 pores per inch. One such material is available from United Foam Plastics of Georgetown, MA.

**[0022]** Thus, the layers 21 and 22, with foam layer 24, are attached at the edges along flange 23, forming a bladder.

**[0023]** Again as particularly contemplated in the present invention, a one-way valve 25 is provided having a raised or domed outer portion 26, which may have indicia 40 thereon (see Fig. 1), such as raised or embossed lettering or the like.

**[0024]** Valve 25 is shown in detail in Fig. 5 and is comprised of outer domed portion 26 having a peripheral flange 27 secured to an inner valve portion 28, in any suitable manner, having an integral annular circular portion 29. Inner valve portion 28 is secured to layer 21 in any suitable manner and has a notched area 30 on its upper surface receiving therein a ring or washer 31. As seen, inner valve portion 28 has an inwardly extending flange portion 32 disposed in an annular notch 33 formed in the main body portion 34 of valve element 35. Valve element 35, as will be discussed, is a movable element within valve 25. The upper portion of valve element 35 has a protuberance 36 extending into a cavity 37 formed on the undersurface of domed portion 26 defined by a downwardly extending annular skirt 38.

**[0025]** As seen in Fig. 3, a plurality of spaced air holes 39 are provided through domed portion 26 communicating the exterior thereof with the interior of valve 25.

**[0026]** In operation, the normal deflated state of bladder 15 is shown in Fig. 5. As seen in Fig. 6, pressing down on valve portion 26 in the direction of arrow 41, allows air to enter through air holes 39, as indicated by arrows 42, 43, down between the valve portions 28 and 34 into the interior 24 of the bladder as indicated by arrows 44, 45. This introduces air into the tongue 15 (Fig. 2) and can be accomplished either on or off the user's foot. Fig. 7 illustrates the fully inflated position. The shoe 10 may then be put on the user's foot and laced up. The laces are tightened. Of course, rather than laces, other closing mechanisms may be used, such as straps having Velcro or buckle attachments, as is known to those skilled in the art. The terms inflated and deflated are

relative terms, inflated meaning that there is more air in the bladder than when it is deflated. Therefore, an "inflated" bladder may be holding less air than it is capable of holding, but this same bladder in a "deflated" state would be holding relatively less air than in its "inflated" state.

**[0027]** As seen in Fig. 8, squeezing or pushing down on tongue 15, as seen by arrows 46, 47, allows air to exit from interior 34, via arrows 48, 49, out of openings 39 as indicated by arrows 50, 51. The interior 24 is deflated sufficiently to allow tongue 15 to conform to the user's foot or instep and the lacing over tongue 15 provides cushioning and comfort to the foot of the wearer. This provides a more comfortable fit and conforms the shoe to the wearer's foot.

**[0028]** It can be seen that there is disclosed an athletic shoe comprising a tongue in the form of, or including, a wedge of open-cell foam inside a sealed plastic bladder. A preferred location for the bladder is between the laces, or other closure mechanism, of the shoe and the foot. The foam has a memory, and seeks to maintain an expanded shape. A sealable valve including a one-way diaphragm allows air to move in and out of the bladder. In one method of operation, the valve is opened manually and the bladder is allowed to expand prior to lacing of the shoe. The shoe is then laced up, or otherwise closed if straps or other closing mechanisms are used, placing pressure on the bladder. The valve may then be opened allowing air to exit the bladder conforming the tongue and bladder to the foot of the wearer of the shoe. Alternatively, the bladder can be squeezed and air pushed out past the diaphragm. The valve then self-seals, and holds the bladder in this relatively deflated state. The shoe is then laced up, or closed. The valve is then opened manually, and air is pulled in as the foam expands. The expansion is limited by the space between the foot and the shoe. The result is a customized amount of cushioning because only enough air is present in the bladder to fill the gap between the foot and the shoe.

**[0029]** Although a particular embodiment has been disclosed, variations thereof may occur to an artisan and the scope of the invention should only be limited by the scope of the appended claims.